CLAIMS

1. A power capacitor comprising at least one capacitor element (2a-2d) enclosed in a substantially cylindrical container (1, 22-22c) of a material that substantially comprises a first polymer material, and wherein the container (1, 22-22c) on its envelope surface comprises a plurality of protrusions (23-23e) designed to extend the creepage distance along the container, **characterized** in that the protrusions (23-23e) are substantially of a second polymer material, and that the protrusions are formed with respect to their thickness and radial length so that they cool the capacitor.

2. A power capacitor according to claim 1, **characterized** in that the protrusions (23-23e) comprise at least one protrusion (23c) with a thickness (t2) in the interval of 0.2-10 mm and a radial length (L2) in the interval of 5-50 mm.

3. A power capacitor according to claim 2, **characterized** in that the protrusions (23-23e) comprise at least one protrusion with a thickness (t2) in the interval of 1-4 mm and a radial length (L2) in the interval of 10-25 mm.

4. A power capacitor according to any of the preceding claims, **characterized** in that essentially the whole envelope surface of the power capacitor is covered with a plurality of the protrusions (23-23e).

5. A power capacitor according to claim 1, **characterized** in that the protrusions (23-23e) comprise a plurality of smaller protrusions (23c, 23d) with a thickness (t2) in the interval of 0.2-10 mm and a radial length (L2) in the interval of 5-30 mm, and that the small protrusions (23c, 23d) are arranged in the vicinity of at least one larger protrusion (23e) with a thickness (t3) in the interval of 2-10 mm and a radial length (L3) in the interval of 20-60 mm.

6. A power capacitor according to claim 5, **characterized** in that the protrusions comprise a pattern with a plurality of smaller protrusions (23d) and at least one larger protrusion (23e), and that the pattern is repeated along essentially the whole envelope surface of the capacitor.

7. A power capacitor according to claim 6, **characterized** in that 10-20 smaller protrusions (23d) are arranged in the vicinity of at least one larger protrusion (23e).

8. A power capacitor according to any of the preceding claims, **characterized** in that the protrusions are arranged with an axial pitch (a2) in the interval of 5-25 mm.

9. A power capacitor according to any of the preceding claims, **characterized** in that the capacitor element/s (2a-2d) is/are enclosed in at least one insulating medium (10, 21, 21a) which is in a state different from a liquid state within the working temperature interval of the capacitor.

10. A power capacitor according to any of the preceding claims, **characterized** in that the first polymer material and the second polymer material are of the same kind of polymer materials.

11. A power capacitor according to any of the preceding claims, **characterized** in that the insulating medium (10, 21, 21a), the container (1, 22-22c) and the protrusions (23-23e) of the container are all for the most part of rubber, preferably silicone rubber.

12. A power capacitor according to claim 11, **characterized** in that the insulating medium (10, 21, 21a), the container (1, 22-22c) and the protrusions (23-23e) of the container are of the same kind of rubber.

13. A power capacitor according to any of claims 1-10, **characterized** in that the insulating medium (10, 21, 21a),

the container (1, 22-22c) and the protrusions (23-23e) of the container are all for the most part of a thermoset.

14. A power capacitor according to claim 13, **characterized** in that the insulating medium (10, 21, 21a), the container (1, 22-22c) and the protrusions (23-23e) of the container are of the same kind of thermoset, and that the thermoset is based on one of the following materials: epoxy, polyurethane, polyester.

15. A power capacitor according to any of claims 11-14, **characterized** in that the insulating medium (10, 21), the container (1, 22-22c) and the protrusions (23-23e) of the container are injection-moulded in one single piece.

16. A power capacitor according to any of claims 1-9, **characterized** in that the container (1, 22a-22c) and the protrusions (23a-23e) of the container are of different polymer materials.

17. A power capacitor according to claim 16, **characterized** in that the container (1, 22a-22c) is of polyethylene and the protrusions (23a-23e) are of silicone rubber or EPDM.

18. A power capacitor according to claim 16, **characterized** in that the container (1, 22a-22c) is of fibre-reinforced thermoset and the protrusions (23a-23e) are of silicone rubber or EPDM.

19. A power capacitor according to any of claims 16-18, **characterized** in that the insulating medium (10, 21, 21a) is silicone in gel state.

20. A power capacitor according to any of claims 16-18, **characterized** in that the insulating medium (10, 21, 21a) is based on a thermoset.

21. A power capacitor according to any of the preceding claims, **characterized** in that the capacitor comprises at least one tubular element (20) running in the cylinder direction and extending through each capacitor element (2a-2d).

22. A power capacitor according to claim 21, **characterized** in that the tubular element (20) is reinforced by armouring the tubular element.

23. A power capacitor according to any of the preceding claims, **characterized** in that the container (1, 22a-22c) is reinforced by armouring the container.

24. A power capacitor according to any of the preceding claims, **characterized** in that a diffusion layer is arranged on at least the inside of the container (1, 22a-22c).

25. A method for manufacturing a power capacitor comprising at least one capacitor element (2a-2d) enclosed in a substantially cylindrical container (1, 22a-22c) made of a material that substantially comprises a first polymer material, and wherein the container (1, 22a-22c) on its envelope surface comprises a plurality of protrusions (23-23e) designed so as to extend the creepage distance along the container, **characterized** in that the protrusions (23-23e) are made of a second polymer material, that the protrusions (23-23e) are formed with respect to their length and width so that they cool the capacitor, and that the capacitor element/s is/are encapsulated in a container (1, 22a-22c).

26. A method according to claim 25, **characterized** in that the capacitor element/s (2a-2d) is/are brought to be enclosed in at least one insulating medium which is in state other than liquid state within the working temperature interval of the capacitor.

27. A method according to claim 26, **characterized** in that the manufacture of the container, the application of the protrusions, the encapsulation of the capacitor element/s and the enclosure in the insulating medium are achieved by injection moulding.

28. A method according to claim 27, **characterized** in that the material is rubber, preferably silicone rubber.

29. A method according to claim 27 or 28, **characterized** in that the injection moulding occurs in one single step and with one single material.

30. A method according to claim 27 or 28, **characterized** in that the injection moulding occurs in two steps, whereby in a first step the capacitor element/s (2a-2d) is/are enclosed in the insulating medium and in a second step the container (1, 22-22c) is manufactured, and the protrusions (23a-23e) are applied, and wherein in the first step a polymer material is used as material which has lower viscosity than the polymer material that is used in the second step.

31. A method according to claim 25, **characterized** in that a cylindrical polymer tube is provided for forming the container (1, 22-22c), that the protrusions (23a-23e) are applied to the polymer tube, whereby the tube is preferably of polyethylene, and that the capacitor element/s (2a-2d) is/are placed in the polymer tube.

32. A method according to any of claims 27-31, **characterized** in that each capacitor element (2a-2d) prior to injection moulding is applied to a tubular element (20) extending through each capacitor element.

33. A method according to of claim 32, **characterized** in that the tubular element (20) is reinforced by armouring.

34. A method according to any of claims 31-33, **characterized** in that the protrusions (23a-23e) are applied to the container (1, 22a-22c) by injection moulding, by winding them in a spiral around the container, or by providing them as prefabricated sleeve-like elements which are threaded onto the container.

35. A method according to any of the preceding claims, **characterized** in that the container (1, 22-22c) is reinforced by armouring.

36. A method according to any of the preceding claims, **characterized** in that a diffusion layer is applied to at least the inside of the container (1, 22-22c).

37. A method according to claim 34, **characterized** in that at least the outside of the container (1, 22-22c) is coated with silicone before the protrusions are applied.

38. A method according to claim 31, **characterized** in that the protrusions are applied to the container (1, 22-22c) by injection moulding and that the container is surface-modified prior to the injection moulding.

39. A method according to any of claims 31-38, **characterized** in that a mechanical support is applied for the container prior to the injection moulding.

40. Use of a power capacitor according to any of claims 1-24 at voltages exceeding 1 kV, preferably at least 5 kV.

41. Use of a power capacitor according to any of claims 1-24 in a system for transmission of alternating current (AC).